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## Glossary

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<b>305(b)</b>	Refers to section 305 subsection “b” of the Clean Water Act. 305(b) generally describes a report of each state’s water quality, and is the principle means by which the U.S. Environmental Protection Agency, Congress, and the public evaluate whether U.S. waters meet water quality standards, the progress made in maintaining and restoring water quality, and the extent of the remaining problems.
<b>§303(d)</b>	Refers to section 303 subsection “d” of the Clean Water Act. Section 303(d) requires states to develop a list of water bodies that do not meet water quality standards. This section also requires total maximum daily loads (TMDLs) be prepared for listed waters. Both the list and the TMDLs are subject to U.S. Environmental Protection Agency approval.
<b>Acre-Foot</b>	A volume of water that would cover an acre to a depth of one foot. Often used to quantify reservoir storage and the annual discharge of large rivers.
<b>Adsorption</b>	The adhesion of one substance to the surface of another. Clays, for example, can adsorb phosphorus and organic molecules
<b>Aeration</b>	A process by which water becomes charged with air directly from the atmosphere. Dissolved gases, such as oxygen, are then available for reactions in water.
<b>Aerobic</b>	Describes life, processes, or conditions that require the presence of oxygen.
<b>Assessment Database (ADB)</b>	The ADB is a relational database application designed for the U.S. Environmental Protection Agency for tracking water quality assessment data, such as use attainment and causes and sources of impairment. States need to track this information and many other types of assessment data for thousands of water bodies, and integrate it into meaningful reports. The ADB is designed to make this process accurate, straightforward, and user-friendly for participating states, territories, tribes, and basin commissions.
<b>Adfluvial</b>	Describes fish whose life history involves seasonal migration from lakes to streams for spawning.
<b>Adjunct</b>	In the context of water quality, adjunct refers to areas directly adjacent to focal or refuge habitats that have been degraded by human or natural disturbances and do not presently support high diversity or abundance of native species.



<b>Alevin</b>	A newly hatched, incompletely developed fish (usually a salmonid) still in nest or inactive on the bottom of a water body, living off stored yolk.
<b>Algae</b>	Non-vascular (without water-conducting tissue) aquatic plants that occur as single cells, colonies, or filaments.
<b>Alluvium</b>	Unconsolidated recent stream deposition.
<b>Ambient</b>	General conditions in the environment. In the context of water quality, ambient waters are those representative of general conditions, not associated with episodic perturbations, or specific disturbances such as a wastewater outfall (Armantrout 1998, EPA 1996).
<b>Anadromous</b>	Fish, such as salmon and sea-run trout, that live part or the majority of their lives in the salt water but return to fresh water to spawn.
<b>Anaerobic</b>	Describes the processes that occur in the absence of molecular oxygen and describes the condition of water that is devoid of molecular oxygen.
<b>Anoxia</b>	The condition of oxygen absence or deficiency.
<b>Anthropogenic</b>	Relating to, or resulting from, the influence of human beings on nature.
<b>Anti-Degradation</b>	Refers to the U.S. Environmental Protection Agency's interpretation of the Clean Water Act goal that states and tribes maintain, as well as restore, water quality. This applies to waters that meet or are of higher water quality than required by state standards. State rules provide that the quality of those high quality waters may be lowered only to allow important social or economic development and only after adequate public participation (IDAPA 58.01.02.051). In all cases, the existing beneficial uses must be maintained. State rules further define lowered water quality to be 1) a measurable change, 2) a change adverse to a use, and 3) a change in a pollutant relevant to the water's uses (IDAPA 58.01.02.003.56).
<b>Aquatic</b>	Occurring, growing, or living in water.
<b>Aquifer</b>	An underground, water-bearing layer or stratum of permeable rock, sand, or gravel capable of yielding of water to wells or springs.
<b>Assemblage (aquatic)</b>	An association of interacting populations of organisms in a given water body; for example, a fish assemblage, or a benthic macroinvertebrate assemblage (also see Community) (EPA 1996).
<b>Assimilative Capacity</b>	The ability to process or dissipate pollutants without ill effect to beneficial uses.
<b>Autotrophic</b>	An organism is considered autotrophic if it uses carbon dioxide as its main source of carbon. This most commonly happens through photosynthesis.

<b>Batholith</b>	A large body of intrusive igneous rock that has more than 40 square miles of surface exposure and no known floor. A batholith usually consists of coarse-grained rocks such as granite.
<b>Bed load</b>	Material (generally sand-sized or larger sediment) that is carried along the streambed by rolling or bouncing.
<b>Beneficial Use</b>	Any of the various uses of water, including, but not limited to, aquatic biota, recreation, water supply, wildlife habitat, and aesthetics, which are recognized in water quality standards.
<b>Beneficial Use Reconnaissance Program (BURP)</b>	A program for conducting systematic biological and physical habitat surveys of water bodies in Idaho. BURP protocols address lakes, reservoirs, and wadeable streams and rivers
<b>Benthic</b>	Pertaining to or living on or in the bottom sediments of a water body
<b>Benthic Organic Matter.</b>	The organic matter on the bottom of a water body.
<b>Benthos</b>	Organisms living in and on the bottom sediments of lakes and streams. Originally, the term meant the lake bottom, but it is now applied almost uniformly to the animals associated with the lake and stream bottoms.
<b>Best Management Practices (BMPs)</b>	Structural, nonstructural, and managerial techniques that are effective and practical means to control nonpoint source pollutants.
<b>Best Professional Judgment</b>	A conclusion and/or interpretation derived by a trained and/or technically competent individual by applying interpretation and synthesizing information.
<b>Biochemical Oxygen Demand (BOD)</b>	The amount of dissolved oxygen used by organisms during the decomposition (respiration) of organic matter, expressed as mass of oxygen per volume of water, over some specified period of time.
<b>Biological Integrity</b>	1) The condition of an aquatic community inhabiting unimpaired water bodies of a specified habitat as measured by an evaluation of multiple attributes of the aquatic biota (EPA 1996). 2) The ability of an aquatic ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to the natural habitats of a region (Karr 1991).
<b>Biomass</b>	The weight of biological matter. Standing crop is the amount of biomass (e.g., fish or algae) in a body of water at a given time. Often expressed as grams per square meter.
<b>Biota</b>	The animal and plant life of a given region.
<b>Biotic</b>	A term applied to the living components of an area.

<b>Clean Water Act (CWA)</b>	The Federal Water Pollution Control Act (commonly known as the Clean Water Act), as last reauthorized by the Water Quality Act of 1987, establishes a process for states to use to develop information on, and control the quality of, the nation's water resources.
<b>Coliform Bacteria</b>	A group of bacteria predominantly inhabiting the intestines of humans and animals but also found in soil. Coliform bacteria are commonly used as indicators of the possible presence of pathogenic organisms (also see Fecal Coliform Bacteria).
<b>Colluvium</b>	Material transported to a site by gravity.
<b>Community</b>	A group of interacting organisms living together in a given place.
<b>Conductivity</b>	The ability of an aqueous solution to carry electric current, expressed in micro ( $\mu$ ) mhos/cm at 25 °C. Conductivity is affected by dissolved solids and is used as an indirect measure of total dissolved solids in a water sample.
<b>Cretaceous</b>	The final period of the Mesozoic era (after the Jurassic and before the Tertiary period of the Cenozoic era), thought to have covered the span of time between 135 and 65 million years ago.
<b>Criteria</b>	In the context of water quality, numeric or descriptive factors taken into account in setting standards for various pollutants. These factors are used to determine limits on allowable concentration levels, and to limit the number of violations per year. The U.S. Environmental Protection Agency develops criteria guidance; states establish criteria.
<b>Cubic Feet per Second</b>	A unit of measure for the rate of flow or discharge of water. One cubic foot per second is the rate of flow of a stream with a cross-section of one square foot flowing at a mean velocity of one foot per second. At a steady rate, once cubic foot per second is equal to 448.8 gallons per minute and 10,984 acre-feet per day.
<b>Cultural Eutrophication</b>	The process of eutrophication that has been accelerated by human-caused influences. Usually seen as an increase in nutrient loading (also see Eutrophication).
<b>Culturally Induced Erosion</b>	Erosion caused by increased runoff or wind action due to the work of humans in deforestation, cultivation of the land, overgrazing, and disturbance of natural drainages; the excess of erosion over the normal for an area (also see Erosion).
<b>Debris Torrent</b>	The sudden down slope movement of soil, rock, and vegetation on steep slopes, often caused by saturation from heavy rains.

<b>Decomposition</b>	The breakdown of organic molecules (e.g., sugar) to inorganic molecules (e.g., carbon dioxide and water) through biological and nonbiological processes.
<b>Depth Fines</b>	Percent by weight of particles of small size within a vertical core of volume of a streambed or lake bottom sediment. The upper size threshold for fine sediment for fisheries purposes varies from 0.8 to 6.5 mm depending on the observer and methodology used. The depth sampled varies but is typically about one foot (30 cm).
<b>Designated Uses</b>	Those water uses identified in state water quality standards that must be achieved and maintained as required under the Clean Water Act.
<b>Discharge</b>	The amount of water flowing in the stream channel at the time of measurement. Usually expressed as cubic feet per second (cfs).
<b>Dissolved Oxygen (DO)</b>	The oxygen dissolved in water. Adequate DO is vital to fish and other aquatic life.
<b>Disturbance</b>	Any event or series of events that disrupts ecosystem, community, or population structure and alters the physical environment.
<b><i>E. coli</i></b>	Short for <i>Escherichia Coli</i> , <i>E. coli</i> are a group of bacteria that are a subspecies of coliform bacteria. Most <i>E. coli</i> are essential to the healthy life of all warm-blooded animals, including humans. Their presence is often indicative of fecal contamination.
<b>Ecology</b>	The scientific study of relationships between organisms and their environment; also defined as the study of the structure and function of nature.
<b>Ecological Indicator</b>	A characteristic of an ecosystem that is related to, or derived from, a measure of a biotic or abiotic variable that can provide quantitative information on ecological structure and function. An indicator can contribute to a measure of integrity and sustainability. Ecological indicators are often used within the multimetric index framework.
<b>Ecological Integrity</b>	The condition of an unimpaired ecosystem as measured by combined chemical, physical (including habitat), and biological attributes (EPA 1996).
<b>Ecosystem</b>	The interacting system of a biological community and its non-living (abiotic) environmental surroundings.
<b>Effluent</b>	A discharge of untreated, partially treated, or treated wastewater into a receiving water body.
<b>Endangered Species</b>	Animals, birds, fish, plants, or other living organisms threatened with imminent extinction. Requirements for declaring a species as endangered are contained in the Endangered Species Act.

<b>Environment</b>	The complete range of external conditions, physical and biological, that affect a particular organism or community.
<b>Eocene</b>	An epoch of the early Tertiary period, after the Paleocene and before the Oligocene.
<b>Eolian</b>	Windblown, referring to the process of erosion, transport, and deposition of material by the wind.
<b>Ephemeral Stream</b>	A stream or portion of a stream that flows only in direct response to precipitation. It receives little or no water from springs and no long continued supply from melting snow or other sources. Its channel is at all times above the water table. (American Geologic Institute 1962).
<b>Erosion</b>	The wearing away of areas of the earth's surface by water, wind, ice, and other forces.
<b>Eutrophic</b>	From Greek for "well nourished," this describes a highly productive body of water in which nutrients do not limit algal growth. It is typified by high algal densities and low clarity.
<b>Eutrophication</b>	1) Natural process of maturing (aging) in a body of water. 2) The natural and human-influenced process of enrichment with nutrients, especially nitrogen and phosphorus, leading to an increased production of organic matter.
<b>Exceedance</b>	A violation (according to DEQ policy) of the pollutant levels permitted by water quality criteria.
<b>Existing Beneficial Use or Existing Use</b>	A beneficial use actually attained in waters on or after November 28, 1975, whether or not the use is designated for the waters in Idaho's <i>Water Quality Standards and Wastewater Treatment Requirements</i> (IDAPA 58.01.02).
<b>Exotic Species</b>	A species that is not native (indigenous) to a region.
<b>Extrapolation</b>	Estimation of unknown values by extending or projecting from known values.
<b>Fauna</b>	Animal life, especially the animals characteristic of a region, period, or special environment.
<b>Fecal Coliform Bacteria</b>	Bacteria found in the intestinal tracts of all warm-blooded animals or mammals. Their presence in water is an indicator of pollution and possible contamination by pathogens (also see Coliform Bacteria).
<b>Fecal Streptococci</b>	A species of spherical bacteria including pathogenic strains found in the intestines of warm-blooded animals.
<b>Feedback Loop</b>	In the context of watershed management planning, a feedback loop is a process that provides for tracking progress toward goals and revising actions according to that progress.
<b>Fixed-Location Monitoring</b>	Sampling or measuring environmental conditions continuously or repeatedly at the same location.

<b>Flow</b>	See Discharge.
<b>Fluvial</b>	In fisheries, this describes fish whose life history takes place entirely in streams but migrate to smaller streams for spawning.
<b>Focal</b>	Critical areas supporting a mosaic of high quality habitats that sustain a diverse or unusually productive complement of native species.
<b>Fully Supporting</b>	In compliance with water quality standards and within the range of biological reference conditions for all designated and exiting beneficial uses as determined through the <i>Water Body Assessment Guidance</i> (Grafe et al. 2002).
<b>Fully Supporting Cold Water</b>	Reliable data indicate functioning, sustainable cold water biological assemblages (e.g., fish, macroinvertebrates, or algae), none of which have been modified significantly beyond the natural range of reference conditions (EPA 1997).
<b>Fully Supporting but Threatened</b>	An intermediate assessment category describing water bodies that fully support beneficial uses, but have a declining trend in water quality conditions, which if not addressed, will lead to a “not fully supporting” status.
<b>Geographical Information Systems (GIS)</b>	A georeferenced database.
<b>Geometric Mean</b>	A back-transformed mean of the logarithmically transformed numbers often used to describe highly variable, right-skewed data (a few large values), such as bacterial data.
<b>Grab Sample</b>	A single sample collected at a particular time and place. It may represent the composition of the water in that water column.
<b>Gradient</b>	The slope of the land, water, or streambed surface.
<b>Ground Water</b>	Water found beneath the soil surface saturating the layer in which it is located. Most ground water originates as rainfall, is free to move under the influence of gravity, and usually emerges again as stream flow.
<b>Growth Rate</b>	A measure of how quickly something living will develop and grow, such as the amount of new plant or animal tissue produced per a given unit of time, or number of individuals added to a population.
<b>Habitat</b>	The living place of an organism or community.
<b>Headwater</b>	The origin or beginning of a stream.
<b>Hydrologic Basin</b>	The area of land drained by a river system, a reach of a river and its tributaries in that reach, a closed basin, or a group of streams forming a drainage area (also see Watershed).

<b>Hydrologic Cycle</b>	The cycling of water from the atmosphere to the earth (precipitation) and back to the atmosphere (evaporation and plant transpiration). Atmospheric moisture, clouds, rainfall, runoff, surface water, ground water, and water infiltrated in soils are all part of the hydrologic cycle.
<b>Hydrologic Unit</b>	One of a nested series of numbered and named watersheds arising from a national standardization of watershed delineation. The initial 1974 effort (USGS 1987) described four levels (region, subregion, accounting unit, cataloging unit) of watersheds throughout the United States. The fourth level is uniquely identified by an eight-digit code built of two-digit fields for each level in the classification. Originally termed a cataloging unit, fourth field hydrologic units have been more commonly called subbasins. Fifth and sixth field hydrologic units have since been delineated for much of the country and are known as watershed and subwatersheds, respectively.
<b>Hydrologic Unit Code (HUC)</b>	The number assigned to a hydrologic unit. Often used to refer to fourth field hydrologic units.
<b>Hydrology</b>	The science dealing with the properties, distribution, and circulation of water.
<b>Impervious</b>	Describes a surface, such as pavement, that water cannot penetrate.
<b>Influent</b>	A tributary stream.
<b>Inorganic</b>	Materials not derived from biological sources.
<b>Instantaneous</b>	A condition or measurement at a moment (instant) in time.
<b>Intergravel Dissolved Oxygen</b>	The concentration of dissolved oxygen within spawning gravel. Consideration for determining spawning gravel includes species, water depth, velocity, and substrate.
<b>Intermittent Stream</b>	1) A stream that flows only part of the year, such as when the ground water table is high or when the stream receives water from springs or from surface sources such as melting snow in mountainous areas. The stream ceases to flow above the streambed when losses from evaporation or seepage exceed the available stream flow. 2) A stream that has a period of zero flow for at least one week during most years.
<b>Interstate Waters</b>	Waters that flow across or form part of state or international boundaries, including boundaries with Indian nations.
<b>Irrigation Return Flow</b>	Surface (and subsurface) water that leaves a field following the application of irrigation water and eventually flows into streams.

<b>Key Watershed</b>	A watershed that has been designated in Idaho Governor Batt's <i>State of Idaho Bull Trout Conservation Plan</i> (1996) as critical to the long-term persistence of regionally important trout populations.
<b>Knickpoint</b>	Any interruption or break of slope.
<b>Land Application</b>	A process or activity involving application of wastewater, surface water, or semi-liquid material to the land surface for the purpose of treatment, pollutant removal, or ground water recharge.
<b>Limiting Factor</b>	A chemical or physical condition that determines the growth potential of an organism. This can result in a complete inhibition of growth, but typically results in less than maximum growth rates.
<b>Limnology</b>	The scientific study of fresh water, especially the history, geology, biology, physics, and chemistry of lakes.
<b>Load Allocation (LA)</b>	A portion of a water body's load capacity for a given pollutant that is given to a particular nonpoint source (by class, type, or geographic area).
<b>Load(ing)</b>	The quantity of a substance entering a receiving stream, usually expressed in pounds or kilograms per day or tons per year. Loading is the product of flow (discharge) and concentration.
<b>Loading Capacity (LC)</b>	A determination of how much pollutant a water body can receive over a given period without causing violations of state water quality standards. Upon allocation to various sources, and a margin of safety, it becomes a total maximum daily load.
<b>Loam</b>	Refers to a soil with a texture resulting from a relative balance of sand, silt, and clay. This balance imparts many desirable characteristics for agricultural use.
<b>Loess</b>	A uniform wind-blown deposit of silty material. Silty soils are among the most highly erodible.
<b>Lotic</b>	An aquatic system with flowing water such as a brook, stream, or river where the net flow of water is from the headwaters to the mouth.
<b>Luxury Consumption</b>	A phenomenon in which sufficient nutrients are available in either the sediments or the water column of a water body, such that aquatic plants take up and store an abundance in excess of the plants' current needs.
<b>Macroinvertebrate</b>	An invertebrate animal (without a backbone) large enough to be seen without magnification and retained by a 500µm mesh (U.S. #30) screen.



<b>Macrophytes</b>	Rooted and floating vascular aquatic plants, commonly referred to as water weeds. These plants usually flower and bear seeds. Some forms, such as duckweed and coontail ( <i>Ceratophyllum sp.</i> ), are free-floating forms not rooted in sediment.
<b>Margin of Safety (MOS)</b>	An implicit or explicit portion of a water body's loading capacity set aside to allow the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body. This is a required component of a total maximum daily load (TMDL) and is often incorporated into conservative assumptions used to develop the TMDL (generally within the calculations and/or models). The MOS is not allocated to any sources of pollution.
<b>Mass Wasting</b>	A general term for the down slope movement of soil and rock material under the direct influence of gravity.
<b>Mean</b>	Describes the central tendency of a set of numbers. The arithmetic mean (calculated by adding all items in a list, then dividing by the number of items) is the statistic most familiar to most people.
<b>Median</b>	The middle number in a sequence of numbers. If there are an even number of numbers, the median is the average of the two middle numbers. For example, 4 is the median of 1, 2, 4, 14, 16; and 6 is the median of 1, 2, 5, 7, 9, 11.
<b>Metric</b>	1) A discrete measure of something, such as an ecological indicator (e.g., number of distinct taxon). 2) The metric system of measurement.
<b>Milligrams per Liter (mg/L)</b>	A unit of measure for concentration in water, essentially equivalent to parts per million (ppm).
<b>Million Gallons per Day (MGD)</b>	A unit of measure for the rate of discharge of water, often used to measure flow at wastewater treatment plants. One MGD is equal to 1.547 cubic feet per second.
<b>Miocene</b>	Of, relating to, or being an epoch of, the Tertiary between the Pliocene and the Oligocene periods, or the corresponding system of rocks.
<b>Monitoring</b>	A periodic or continuous measurement of the properties or conditions of some medium of interest, such as monitoring a water body.
<b>Mouth</b>	The location where flowing water enters into a larger water body.
<b>National Pollution Discharge Elimination System (NPDES)</b>	A national program established by the Clean Water Act for permitting point sources of pollution. Discharge of pollution from point sources is not allowed without a permit.
<b>Natural Condition</b>	A condition indistinguishable from that without human-caused disruptions.

<b>Nitrogen</b>	An element essential to plant growth, and thus is considered a nutrient.
<b>Nodal</b>	Areas that are separated from focal and adjunct habitats, but serve critical life history functions for individual native fish.
<b>Nonpoint Source</b>	A dispersed source of pollutants, generated from a geographical area when pollutants are dissolved or suspended in runoff and then delivered into waters of the state. Nonpoint sources are without a discernable point or origin. They include, but are not limited to, irrigated and non-irrigated lands used for grazing, crop production, and silviculture; rural roads; construction and mining sites; log storage or rafting; and recreation sites.
<b>Not Assessed (NA)</b>	A concept and an assessment category describing water bodies that have been studied, but are missing critical information needed to complete an assessment.
<b>Not Attainable</b>	A concept and an assessment category describing water bodies that demonstrate characteristics that make it unlikely that a beneficial use can be attained (e.g., a stream that is dry but designated for salmonid spawning).
<b>Not Fully Supporting</b>	Not in compliance with water quality standards or not within the range of biological reference conditions for any beneficial use as determined through the <i>Water Body Assessment Guidance</i> (Grafe et al. 2002).
<b>Not Fully Supporting Cold Water</b>	At least one biological assemblage has been significantly modified beyond the natural range of its reference condition (EPA 1997).
<b>Nuisance</b>	Anything which is injurious to the public health or an obstruction to the free use, in the customary manner, of any waters of the state.
<b>Nutrient</b>	Any substance required by living things to grow. An element or its chemical forms essential to life, such as carbon, oxygen, nitrogen, and phosphorus. Commonly refers to those elements in short supply, such as nitrogen and phosphorus, which usually limit growth.
<b>Nutrient Cycling</b>	The flow of nutrients from one component of an ecosystem to another, as when macrophytes die and release nutrients that become available to algae (organic to inorganic phase and return).
<b>Oligotrophic</b>	The Greek term for “poorly nourished.” This describes a body of water in which productivity is low and nutrients are limiting to algal growth, as typified by low algal density and high clarity.
<b>Organic Matter</b>	Compounds manufactured by plants and animals that contain principally carbon.

<b>Orthophosphate</b>	A form of soluble inorganic phosphorus most readily used for algal growth.
<b>Oxygen-Demanding Materials</b>	Those materials, mainly organic matter, in a water body that consume oxygen during decomposition.
<b>Parameter</b>	A variable, measurable property whose value is a determinant of the characteristics of a system, such as temperature, dissolved oxygen, and fish populations are parameters of a stream or lake.
<b>Partitioning</b>	The sharing of limited resources by different races or species; use of different parts of the habitat, or the same habitat at different times. Also the separation of a chemical into two or more phases, such as partitioning of phosphorus between the water column and sediment.
<b>Pathogens</b>	Disease-producing organisms (e.g., bacteria, viruses, parasites).
<b>Perennial Stream</b>	A stream that flows year-around in most years.
<b>Periphyton</b>	Attached microflora (algae and diatoms) growing on the bottom of a water body or on submerged substrates, including larger plants.
<b>Pesticide</b>	Substances or mixtures of substances intended for preventing, destroying, repelling, or mitigating any pest. Also, any substance or mixture intended for use as a plant regulator, defoliant, or desiccant.
<b>pH</b>	The negative $\log_{10}$ of the concentration of hydrogen ions, a measure which in water ranges from very acid (pH= 1) to very alkaline (pH= 14). A pH of 7 is neutral. Surface waters usually measure between pH 6 and 9.
<b>Phased TMDL</b>	A total maximum daily load (TMDL) that identifies interim load allocations and details further monitoring to gauge the success of management actions in achieving load reduction goals and the effect of actual load reductions on the water quality of a water body. Under a phased TMDL, a refinement of load allocations, wasteload allocations, and the margin of safety is planned at the outset.
<b>Phosphorus</b>	An element essential to plant growth, often in limited supply, and thus considered a nutrient.
<b>Physiochemical</b>	In the context of bioassessment, the term is commonly used to mean the physical and chemical factors of the water column that relate to aquatic biota. Examples in bioassessment usage include saturation of dissolved gases, temperature, pH, conductivity, dissolved or suspended solids, forms of nitrogen, and phosphorus. This term is used interchangeable with the terms “physical/chemical” and “physicochemical.”

<b>Plankton</b>	Microscopic algae (phytoplankton) and animals (zooplankton) that float freely in open water of lakes and oceans.
<b>Point Source</b>	A source of pollutants characterized by having a discrete conveyance, such as a pipe, ditch, or other identifiable “point” of discharge into a receiving water. Common point sources of pollution are industrial and municipal wastewater.
<b>Pollutant</b>	Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.
<b>Pollution</b>	A very broad concept that encompasses human-caused changes in the environment which alter the functioning of natural processes and produce undesirable environmental and health effects. This includes human-induced alteration of the physical, biological, chemical, and radiological integrity of water and other media.
<b>Population</b>	A group of interbreeding organisms occupying a particular space; the number of humans or other living creatures in a designated area.
<b>Pretreatment</b>	The reduction in the amount of pollutants, elimination of certain pollutants, or alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, discharging or otherwise introducing such wastewater into a publicly owned wastewater treatment plant.
<b>Primary Productivity</b>	The rate at which algae and macrophytes fix carbon dioxide using light energy. Commonly measured as milligrams of carbon per square meter per hour.
<b>Protocol</b>	A series of formal steps for conducting a test or survey.
<b>Qualitative</b>	Descriptive of kind, type, or direction.
<b>Quality Assurance (QA)</b>	A program organized and designed to provide accurate and precise results. Included are the selection of proper technical methods, tests, or laboratory procedures; sample collection and preservation; the selection of limits; data evaluation; quality control; and personnel qualifications and training. The goal of QA is to assure the data provided are of the quality needed and claimed (Rand 1995, EPA 1996).
<b>Quality Control (QC)</b>	Routine application of specific actions required to provide information for the quality assurance program. Included are standardization, calibration, and replicate samples. QC is implemented at the field or bench level (Rand 1995, EPA 1996).
<b>Quantitative</b>	Descriptive of size, magnitude, or degree.
<b>Reach</b>	A stream section with fairly homogenous physical characteristics.

<b>Reconnaissance</b>	An exploratory or preliminary survey of an area.
<b>Reference</b>	A physical or chemical quantity whose value is known, and thus is used to calibrate or standardize instruments.
<b>Reference Condition</b>	1) A condition that fully supports applicable beneficial uses with little affect from human activity and represents the highest level of support attainable. 2) A benchmark for populations of aquatic ecosystems used to describe desired conditions in a biological assessment and acceptable or unacceptable departures from them. The reference condition can be determined through examining regional reference sites, historical conditions, quantitative models, and expert judgment (Hughes 1995).
<b>Reference Site</b>	A specific locality on a water body that is minimally impaired and is representative of reference conditions for similar water bodies.
<b>Representative Sample</b>	A portion of material or water that is as similar in content and consistency as possible to that in the larger body of material or water being sampled.
<b>Resident</b>	A term that describes fish that do not migrate.
<b>Respiration</b>	A process by which organic matter is oxidized by organisms, including plants, animals, and bacteria. The process converts organic matter to energy, carbon dioxide, water, and lesser constituents.
<b>Riffle</b>	A relatively shallow, gravelly area of a streambed with a locally fast current, recognized by surface choppiness.
<b>Riparian</b>	Also an area of higher streambed gradient and roughness. Associated with aquatic (stream, river, lake) habitats. Living or located on the bank of a water body.
<b>Riparian Habitat Conservation Area (RHCA)</b>	A USFS description of land within the following number of feet up-slope of each of the banks of streams: <ul style="list-style-type: none"><li>- 300 feet from perennial fish-bearing streams</li><li>- 150 feet from perennial non-fish-bearing streams</li><li>- 100 feet from intermittent streams, wetlands, and ponds in priority watersheds.</li></ul>
<b>River</b>	A large, natural, or human-modified stream that flows in a defined course or channel, or a series of diverging and converging channels.
<b>Runoff</b>	The portion of rainfall, melted snow, or irrigation water that flows across the surface, through shallow underground zones (interflow), and through ground water to creates streams.
<b>Sediments</b>	Deposits of fragmented materials from weathered rocks and organic material that were suspended in, transported by, and eventually deposited by water or air.
<b>Settleable Solids</b>	The volume of material that settles out of one liter of water in one hour.

<b>Species</b>	1) A reproductively isolated aggregate of interbreeding organisms having common attributes and usually designated by a common name. 2) An organism belonging to such a category.
<b>Spring</b>	Ground water seeping out of the earth where the water table intersects the ground surface.
<b>Stagnation</b>	The absence of mixing in a water body.
<b>Stenothermal</b>	Unable to tolerate a wide temperature range.
<b>Stratification</b>	A Department of Environmental Quality classification method used to characterize comparable units (also called classes or strata).
<b>Stream</b>	A natural water course containing flowing water, at least part of the year. Together with dissolved and suspended materials, a stream normally supports communities of plants and animals within the channel and the riparian vegetation zone.
<b>Stream Order</b>	Hierarchical ordering of streams based on the degree of branching. A first-order stream is an unforked or unbranched stream. Under Strahler's (1957) system, higher order streams result from the joining of two streams of the same order.
<b>Storm Water Runoff</b>	Rainfall that quickly runs off the land after a storm. In developed watersheds the water flows off roofs and pavement into storm drains that may feed quickly and directly into the stream. The water often carries pollutants picked up from these surfaces.
<b>Stressors</b>	Physical, chemical, or biological entities that can induce adverse effects on ecosystems or human health.
<b>Subbasin</b>	A large watershed of several hundred thousand acres. This is the name commonly given to 4 <sup>th</sup> field hydrologic units (also see Hydrologic Unit).
<b>SBA (SBA)</b>	A watershed-based problem assessment that is the first step in developing a total maximum daily load in Idaho.
<b>Subwatershed</b>	A smaller watershed area delineated within a larger watershed, often for purposes of describing and managing localized conditions. Also proposed for adoption as the formal name for 6 <sup>th</sup> field hydrologic units.
<b>Surface Fines</b>	Sediments of small size deposited on the surface of a streambed or lake bottom. The upper size threshold for fine sediment for fisheries purposes varies from 0.8 to 605 $\mu$ m depending on the observer and methodology used. Results are typically expressed as a percentage of observation points with fine sediment.

<b>Surface Runoff</b>	Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter of nonpoint source pollutants in rivers, streams, and lakes. Surface runoff is also called overland flow.
<b>Surface Water</b>	All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors that are directly influenced by surface water.
<b>Suspended Sediments</b>	Fine material (usually sand size or smaller) that remains suspended by turbulence in the water column until deposited in areas of weaker current. These sediments cause turbidity and, when deposited, reduce living space within streambed gravels and can cover fish eggs or alevins.
<b>Taxon</b>	Any formal taxonomic unit or category of organisms (e.g., species, genus, family, order). The plural of taxon is taxa (Armantrout 1998).
<b>Tertiary</b>	An interval of geologic time lasting from 66.4 to 1.6 million years ago. It constitutes the first of two periods of the Cenozoic Era, the second being the Quaternary. The Tertiary has five subdivisions, which from oldest to youngest are the Paleocene, Eocene, Oligocene, Miocene, and Pliocene epochs.
<b>Thalweg</b>	The center of a stream's current, where most of the water flows.
<b>Threatened Species</b>	Species, determined by the U.S. Fish and Wildlife Service, which are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
<b>Total Maximum Daily Load (TMDL)</b>	A TMDL is a water body's loading capacity after it has been allocated among pollutant sources. It can be expressed on a time basis other than daily if appropriate. Sediment loads, for example, are often calculated on an annual bases. $TMDL = Loading\ Capacity = Load\ Allocation + Wasteload\ Allocation + Margin\ of\ Safety$ . In common usage, a TMDL also refers to the written document that contains the statement of loads and supporting analyses, often incorporating TMDLs for several water bodies and/or pollutants within a given watershed.
<b>Total Dissolved Solids</b>	Dry weight of all material in solution in a water sample as determined by evaporating and drying filtrate.

<b>Total Suspended Solids (TSS)</b>	The dry weight of material retained on a filter after filtration. Filter pore size and drying temperature can vary. American Public Health Association Standard Methods (Greenborg, Clescevi, and Eaton 1992) call for using a filter of 2.0 micron or smaller; a 0.45 micron filter is also often used. This method calls for drying at a temperature of 103-105 °C.
<b>Toxic Pollutants</b>	Materials that cause death, disease, or birth defects in organisms that ingest or absorb them. The quantities and exposures necessary to cause these effects can vary widely.
<b>Tributary Trophic State</b>	A stream feeding into a larger stream or lake. The level of growth or productivity of a lake as measured by phosphorus content, chlorophyll <i>a</i> concentrations, amount (biomass) of aquatic vegetation, algal abundance, and water clarity.
<b>Total Dissolved Solids</b>	Dry weight of all material in solution in a water sample as determined by evaporating and drying filtrate.
<b>Total Suspended Solids (TSS)</b>	The dry weight of material retained on a filter after filtration. Filter pore size and drying temperature can vary. American Public Health Association Standard Methods (Greenborg, Clescevi, and Eaton 1995) call for using a filter of 2.0 micron or smaller; a 0.45 micron filter is also often used. This method calls for drying at a temperature of 103-105 °C.
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<b>Turbidity</b>	A measure of the extent to which light passing through water is scattered by fine suspended materials. The effect of turbidity depends on the size of the particles (the finer the particles, the greater the effect per unit weight) and the color of the particles.
<b>Vadose Zone</b>	The unsaturated region from the soil surface to the ground water table.
<b>Wasteload Allocation (WLA)</b>	The portion of receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. Wasteload allocations specify how much pollutant each point source may release to a water body.



<b>Water Body</b>	A stream, river, lake, estuary, coastline, or other water feature, or portion thereof.
<b>Water Column</b>	Water between the interface with the air at the surface and the interface with the sediment layer at the bottom. The idea derives from a vertical series of measurements (oxygen, temperature, phosphorus) used to characterize water.
<b>Water Pollution</b>	Any alteration of the physical, thermal, chemical, biological, or radioactive properties of any waters of the state, or the discharge of any pollutant into the waters of the state, which will or is likely to create a nuisance or to render such waters harmful, detrimental, or injurious to public health, safety, or welfare; to fish and wildlife; or to domestic, commercial, industrial, recreational, aesthetic, or other beneficial uses.
<b>Water Quality</b>	A term used to describe the biological, chemical, and physical characteristics of water with respect to its suitability for a beneficial use.
<b>Water Quality Criteria</b>	Levels of water quality expected to render a body of water suitable for its designated uses. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, or industrial processes.
<b>Water Quality Limited</b>	A label that describes water bodies for which one or more water quality criterion is not met or beneficial uses are not fully supported. Water quality limited segments may or may not be on a §303(d) list.
<b>Water Quality Limited Segment (WQLS)</b>	Any segment placed on a state's §303(d) list for failure to meet applicable water quality standards, and/or is not expected to meet applicable water quality standards in the period prior to the next list. These segments are also referred to as "§303(d) listed."
<b>Water Quality Management Plan</b>	A state or area-wide waste treatment management plan developed and updated in accordance with the provisions of the Clean Water Act.
<b>Water Quality Modeling</b>	The prediction of the response of some characteristics of lake or stream water based on mathematical relations of input variables such as climate, stream flow, and inflow water quality.
<b>Water Quality Standards</b>	State-adopted and U.S. Environmental Protection Agency-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.
<b>Water Table</b>	The upper surface of ground water; below this point, the soil is saturated with water.

<b>Watershed</b>	1) All the land which contributes runoff to a common point in a drainage network, or to a lake outlet. Watersheds are infinitely nested, and any large watershed is composed of smaller “subwatersheds.” 2) The whole geographic region which contributes water to a point of interest in a water body.
<b>Water Body Identification Number (WBID)</b>	A number that uniquely identifies a water body in Idaho and ties in to the Idaho Water Quality Standards and GIS information.
<b>Wetland</b>	An area that is at least some of the time saturated by surface or ground water so as to support with vegetation adapted to saturated soil conditions. Examples include swamps, bogs, fens, and marshes.
<b>Young of the Year</b>	Young fish born the year captured, evidence of spawning activity.

## **Appendix A. Unit Conversion Chart**

Table A-1. Metric - English unit conversions.

	English Units	Metric Units	To Convert	Example
<b>Distance</b>	Miles (mi)	Kilometers (km)	1 mi = 1.61 km 1 km = 0.62 mi	3 mi = 4.83 km 3 km = 1.86 mi
<b>Length</b>	Inches (in) Feet (ft)	Centimeters (cm) Meters (m)	1 in = 2.54 cm 1 cm = 0.39 in 1 ft = 0.30 m 1 m = 3.28 ft	3 in = 7.62 cm 3 cm = 1.18 in 3 ft = 0.91 m 3 m = 9.84 ft
<b>Area</b>	Acres (ac) Square Feet (ft <sup>2</sup> ) Square Miles (mi <sup>2</sup> )	Hectares (ha) Square Meters (m <sup>2</sup> ) Square Kilometers (km <sup>2</sup> )	1 ac = 0.40 ha 1 ha = 2.47 ac 1 ft <sup>2</sup> = 0.09 m <sup>2</sup> 1 m <sup>2</sup> = 10.76 ft <sup>2</sup> 1 mi <sup>2</sup> = 2.59 km <sup>2</sup> 1 km <sup>2</sup> = 0.39 mi <sup>2</sup>	3 ac = 1.20 ha 3 ha = 7.41 ac 3 ft <sup>2</sup> = 0.28 m <sup>2</sup> 3 m <sup>2</sup> = 32.29 ft <sup>2</sup> 3 mi <sup>2</sup> = 7.77 km <sup>2</sup> 3 km <sup>2</sup> = 1.16 mi <sup>2</sup>
<b>Volume</b>	Gallons (gal) Cubic Feet (ft <sup>3</sup> )	Liters (L) Cubic Meters (m <sup>3</sup> )	1 gal = 3.78 L 1 L = 0.26 gal 1 ft <sup>3</sup> = 0.03 m <sup>3</sup> 1 m <sup>3</sup> = 35.32 ft <sup>3</sup>	3 gal = 11.35 L 3 L = 0.79 gal 3 ft <sup>3</sup> = 0.09 m <sup>3</sup> 3 m <sup>3</sup> = 105.94 ft <sup>3</sup>
<b>Flow Rate</b>	Cubic Feet per Second (cfs) <sup>1</sup>	Cubic Meters per Second (m <sup>3</sup> /sec)	1 cfs = 0.03 m <sup>3</sup> /sec 1 m <sup>3</sup> /sec = 35.31 cfs	3 ft <sup>3</sup> /sec = 0.09 m <sup>3</sup> /sec 3 m <sup>3</sup> /sec = 105.94 ft <sup>3</sup> /sec
<b>Concentration</b>	Parts per Million (ppm)	Milligrams per Liter (mg/L)	1 ppm = 1 mg/L	3 ppm = 3 mg/L
<b>Weight</b>	Pounds (lbs)	Kilograms (kg)	1 lb = 0.45 kg 1 kg = 2.20 lbs	3 lb = 1.36 kg 3 kg = 6.61 lb
<b>Temperature</b>	Fahrenheit (°F)	Celsius (°C)	°C = 0.55 (F - 32) °F = (C x 1.8) + 32	3 °F = -15.95 °C 3 °C = 37.4 °F

<sup>1</sup>1 cfs = 0.65 million gallons per day; 1 million gallons per day is equal to 1.55 cfs.<sup>2</sup>The ratio of 1 ppm = 1 mg/L is approximate and is only accurate for water.

## **Appendix B. Distribution List**

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## **Appendix C. Public Comments**

The 30-day public comment period closed on January 6, 2004 at 5:00 p.m. During that period comments were received from the US BLM and the US Forest Service. Several of the US BLM and US Forest Service comments were editorial in nature and those changes were incorporated into the document. Electronic copies of the US BLM and US Forest Service technical comments were provided and are included here. DEQ's responses follow in italics.

### **BLM BURLEY FIELD OFFICE COMMENTS CONCERNING THE DRAFT FOR THE "RAFT RIVER SUBBASIN ASSESSMENT AND TOTAL MAXIMUM DAILY LOADS"**

#### **In reference to Raft River species of special concern on page 60:**

The scientific name for Davis wavewing is *Cymopterus davisii*, not *C. anserinus*. Also, *Astragalus anserinus* and *Penstemon idahoensis* do not occur in the subbasin but are endemic to the Goose Creek watershed.

*These errors were fixed within the document.*

#### **In reference to the discussion of tributaries to Cassia Creek at the top of page 97:**

Rice Spring enters Cassia Creek approximately 3 miles east of Connor which appears to be within the listed segment.

*These errors were fixed within the document.*

#### **In reference to the reservoir discussion within the Cassia Creek discussion on page 103:**

The second and third paragraphs on page 103 discuss various aspects of a reservoir on Cassia Creek which appears to be out of place since no such reservoir exists to our knowledge.

*These errors were fixed within the document.*

#### **In reference to the discussion of TMDL's on the upper segment of Cassia Creek near the bottom of page 103:**

BLM would like clarification on this issue. Is the upper segment of Cassia Creek on the 303(d) list? Is this segment treated any differently than other segments if it is not on the list but is included in the nutrient and bacteria TMDL's for Cassia Creek?

*The upper segment is not on the 1998 §303(d) list. It was removed following the bioassessment protocols in WBAG I. However, for the Raft River SBA and TMDL the water quality data was collected in the upper segment to determine background loads contributed by the upper segment. This process was similar to the data collected in the upper segment of Trapper Creek in the Goose Creek SBA and TMDLs. As a result of the data collection in the upper segment it was determined that bacteria and*

*nutrients were impairing the beneficial uses in both the upper and lower segments of Cassia Creek. Consequently, the TMDLs were developed for whole creek.*

**In reference to the Summary of Past and Present Pollution Control Efforts beginning on page 127:**

BLM has excluded livestock from nearly all perennial portions of Raft River under its management. Also, the BLM lands along Cassia Creek are part of a riparian pasture within the Middle Hill Allotment.

*These past and present pollution control efforts were added to the appropriate sections.*

**In reference to the Raft River monitoring points discussion on page 158:**

The document states that the perennial portions of Raft River are already in fairly good condition which includes the narrows area. Additional work here will have some benefit to this area and potentially downstream but until water is not diverted in Utah, the reach above the narrows to the state line (roughly Edwards Creek to Utah) will not be expected to flow, regardless of what is done at the narrows.

*Implementation of the TMDL will begin in the Narrows area and proceed from there. Other critical areas will have to be identified by the appropriate land management agencies. As Raft River was once a perennial water body any implementation plans developed by these agencies will have to address the area above the Narrows as well.*

**US FOREST SERVICE MINIDOKA RANGER DISTRICT COMMENTS  
CONCERNING THE DRAFT FOR THE “RAFT RIVER SUBBASIN  
ASSESSMENT AND TOTAL MAXIMUM DAILY LOADS”**

Upon review of the Raft River SBA/TMDL, it was noticed in the tables that were submitted that there were a couple omissions:

On the following pages, the Attachments were not included in the document:

Page 130 – Lake Fork Allotment      Pollution control Measure: See Attachment G

Page 134 – Pine Hollow Allotment      Pollution Control Measure: see Attachment A

Page 134 – Grape Creek Allotment      Pollution Control Measure: see Attachment B

Additional comments:

Page xvi: “The second is Raft River Aquifer below Oakley, which is part of the Eastern Snake River Plain Aquifer”. This appears to be copied from the Goose Creek TMDL and needs to be localized.

*These errors were fixed within the document.*

Page 27: Figure 3. Raft River 1998 303(d) listed streams and reservoirs; This figure shows Cassia Creek as listed up to the headwaters area. Does this figure extend the extent of the listed portion of Cassia Creek too far? The 1998 303(d) list indicates that Cassia Creek is listed from Conner Creek to Raft River.

*See Response to BLM Comments*

Page 40: The first paragraph under the Sublett Reservoir heading states: “Sublett Reservoir is the only named reservoir in the Raft River Subbasin and is located in Management Area 20 of the Sawtooth National Forest Lands in the Sublett Mountain Range. It is located in Cassia County and the area is administrated by the Sawtooth National Forest Minidoka Ranger District”.

The statement is not entirely accurate. Only a northern portion of the reservoir (where Lake Fork enters the reservoir) is located on SNF administered lands, the remainder of the reservoir area is not located on administered SNF lands. Our Land and Resource Management Plan states for Management Area 20 that “Sublett Reservoir is located at the south end of the area, mostly off Forest Administered lands”.

*Changes were made to the document to reflect that the majority of Sublett Reservoir lies within private lands.*

Page 46: Table 15. Soil Orders of the Raft River Subbasin. The first NRCS Soil Order listed is Acidisols (Soil Genesis- Acid Soil). It looks as if this could be a typo and should read Aridisols (Soil Genesis – Arid Soil).

*These errors were fixed within the document.*

Page 60: Second Paragraph: “These plants and animals are those that are not listed, but that the USFWS suggest that the federal agencies consider in their management and planting activities. The Sawtooth National Forest contains 44 species on this list”.

Correction: The Dec. 12, 2003 species list sent to the Sawtooth National Forest by the Boise Office of the USFWS contains 37 species of interest that have no legal status under the ESA, but should be considered in project planning an review (There is a list of approximately 43 plant species listed as Sensitive or watch species in our revised plan but they have no ESA protection and therefore USFWS does not administer them)

*These errors were fixed within the document.*

Page 67: Subbasin Forestry heading: “The forest is made up of five administrative units. These include the Burley, Twin Falls, Ketchum, and Fairfield Ranger Districts and the Sawtooth National Recreation Area”.

The Burley and Twin Falls Ranger Districts have been combined into one District called the Minidoka Ranger District.

*These errors were fixed within the document.*

Page 127: United State Forest Service Efforts to Improve Water Quality: “...Trudy Flock of the USFS Burley Ranger District for the Twin Falls Regional Office of DEQ.”

This is the same as the previous comments and should read the Minidoka Ranger District.

*These errors were fixed within the document.*

Page 212: The same as the previous two comments applies here as well for Trudy Flock and Scott Nannenga, both are with the Minidoka Ranger District. Also, Scott Nannenga is misspelled on this page. It is spelled Nannega and should read Nannenga.

*These errors were fixed within the document.*